

FOLLOWING IS AMENDED PAGE 15 IN PLAIN TEXT FORM

invention includes, as previously stated, (1) bodies that are most preferably in the form of carrier particles and that are made of material that do not interfere with photocatalytic activity and do not adversely interact with other components in an end-use application. These (1) bodies that are non-deleterious to photocatalytic reaction have (2) surfaces that are photocatalytic, forming thus a composite photocatalytic material.

[0082] Moreover, these (2) surfaces are not substantially evenly possessed of photocatalytic material and photocatalytic action, but preferably have such photocatalytic material highly specifically located in "spots", or "islands" that may themselves be either 2 or 3-dimensional.

[0083] To realize these "islands" of photocatalyst, the (2) surfaces of the (1) bodies, or carrier particles, are not made from continuous films of photocatalytic material, but are instead made by attaching discrete nanoparticles of photocatalyst. These nanoparticles of photocatalyst are preferably smaller--normally 1×10^{-9} to 1×10^{-7} meters in diameter--than are the carrier particles themselves, which are commonly about 1×10^{-7} to 1×10^{-2} meters in diameter, depending on application. The nanoparticles of photocatalytic material are typically each less than 33% the diameter of the carrier, or core, particles, upon which they reside, and the combined photocatalytic material is typically less than 20% by weight of (i) the combined multiplicity of photocatalytic material nanoparticles and (ii) the carrier, or core, particle.

[0084] Both the size of the (2) carrier particles, or bodies, and the density of the spots, or islands, of (1) surface photocatalytic material are a function of intended application. An exemplary application of a carrier large particle might be for use in a gravel-like roof coating where it is substantially desired only that large, ground-observable, patches of algae should not grow on the roof. In this application the photocatalytic spots, or islands, might also be relatively widely separated, the main goal not being to kill every bacteria or algal cell on the roof, but to prevent formation of a bio-film. Exemplary applications of small carrier particles include the lips of a swimming pools, bathroom tiles, and hospital coatings where it is desired to avoid all bacterial growth whatsoever. Not only are the carrier particles small, but the photocatalytic spots, or islands, may be relatively